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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/725,849	11/30/2000	Jong Jin Park	2658-0252P	8778

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EXAMINER	
AWAD, AMR A	

ART UNIT	PAPER NUMBER
2675	7

DATE MAILED: 12/16/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/725,849	PARK ET AL.	
	Examiner	Art Unit	
	Amr Awad	2675	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *15 September 2003*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-14,16,18,20 and 21* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *9 and 10* is/are allowed.

6)☒ Claim(s) *1-8,11-14,16,18,20 and 21* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

13)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

a) ☐ The translation of the foreign language provisional application has been received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1, 4-5, 8 and 11-14, 16 and 20-21 are rejected under 35 U.S.C. 102(e) as being anticipated by Takahashi (US patent NO. 6,297,792).

As to independent claim 1, Takahashi (figure 6) teaches a liquid crystal display (10) that includes a liquid crystal pixel cells (16) arranged at each intersection between a plurality of lines (Y1-Ym) and a plurality of data lines (X1-Xn) in a matrix type and being driven with thin film transistors (40 in figures 4 and 5) (col.11, lines 28-52). Takahashi teaches applying a first signal to the liquid crystal pixel cells through the data lines for charging thereof during the beginning of a frame (period) and applying a second signal different from the first signal to the liquid crystal pixel cells through the data lines for discharging thereof during an ending of the frame (period) (abstract, col. 14, lines 45-63, col. 15, lines 41-63, col. 19, lines 18-39, and figures 8a-8d and 9a-9b).

As to claim 4, as can be seen from figures 8a-8d and 9a-9b; the gate pulse is applied twice during one period (first half of the period and the second half of the period) (abstract).

As to claim 5, Takahashi (figure 6) teaches a liquid crystal display (10) that includes a liquid crystal pixel cells (16) arranged at each intersection between a plurality of lines (Y1-Ym) and a plurality of data lines (X1-Xn) in a matrix type and being driven with thin film transistors (40 in figures 4 and 5) (col.11, lines 28-52). Takahashi teaches applying a first signal to the liquid crystal pixel cells for charging thereof during the beginning of a frame (period) and applying a second signal to the liquid crystal pixel cells for discharging thereof during an ending of the frame (period) (abstract, col. 14, lines 45-63, col. 15, lines 41-63, col. 19, lines 18-39, and figures 8a-8d and 9a-9b). Figures 8a-8d and 9a-9b); the gate pulse is applied twice during one period (first half of the period and the second half of the period) (abstract).

As to claim 8, Takahashi teaches generating gate pulse (scanning pulse) at a start of the frame and a midpoint of the frame (col. 14, lines 41-63).

As to claim 11, Takahashi teaches a liquid crystal display that includes applying a first signal to the liquid crystal pixel cells for charging thereof during the beginning of a frame (period) and applying a second signal to the liquid crystal pixel cells for discharging thereof during an ending of the frame (period) (abstract, col. 14, lines 45-63, col. 15, lines 41-63, col. 19, lines 18-39, and figures 8a-8d and 9a-9b). Figures 8a-8d and 9a-9b.

As to claim 12, as best understood by the examiner, Takahashi teaches a discharging period takes most time in one period (see figures 8a-8d).

As to claim 13, figures 8a-8d substantially read on the claims by having a pulse of one polarity in the beginning of the period and then substantially no charges are applied in the middle, and a pulse of opposite polarity at the end (col. 14, lines 41-63).

As to claim 14, as can be seen from figures 8a-8d and 9a-9b; the gate pulse is applied twice during one period (first half of the period and the second half of the period) (abstract). Takahashi also teaches applying no charge to the pixel element during an ending of the frame, and applying an opposite charge compared with a beginning of previous frame to the pixel element during a beginning of the next frame (figures 8A-8D and col. 14, lines 35-63).

As to claim 16, as discussed above , since the starting of the discharge is at the second half of the period; then the gate pulse is applied at the mid-point.

As to claim 20, as can be seen above, Takahashi shows that the first and second signals are applied through the data lines and are different from each other (one negative and the other positive).

As to claim 21, as can be seen above, the first signal and the second signal are different from each other.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 2-3 and 6-7 rejected under 35 U.S.C. 103(a) as being unpatentable over Takahashi in view of Miwa et al. (US patent NO. 6,369,469; hereinafter referred to as Miwa).

As to claims 2 and 6, Takahashi teaches all the limitations of claims 2 and 6 except the citation that the liquid crystal layer formed of any one of ferro-electric liquid crystal and an anti-ferro-electric liquid crystal.

However, Miwa teaches a liquid crystal display system that includes applying in one frame period, first and second signal (figure 3, abstract and col. 4, lines 4-18), and wherein a ferro-electric display can be used (col. 5, lines 47-52).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to use Miwa's teaching having a ferro-electric display to be used in Takahashi's device because as it is known in the art, ferro-electric display has a good memory characteristics, and uses less power.

As to claims 3 and 7, Takahashi teaches all the limitations of claims 3 and 7 except the citation that the liquid crystal display includes a liquid crystal layer formed of twisted nematic liquid crystal having a response speed of less than 10ms.

However, Miwa teaches a twisted-nematic liquid crystal display which has a response time of less than 10ms (in Miwa's device, the response time is between 2-5ms) (col. 52-65).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to include the teaching of Miwa having a response time of less than 10ms to be included in Takahashi's device so as to have a high response time and to have a liquid crystal display with a characteristics similar to those of CRT (see Miwa, col. 5, lines 60-65).

5. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Takahashi in view Kubota et al. (US patent NO. 5,907,313; hereinafter referred to as Kubota).

As can be seen above with respect to claim 13, Takahashi teaches all the limitations of claims 18 except the citation that the gate driver includes a plurality of gate driver circuits connected together in series.

However, Kubota (figure 9) teaches a liquid crystal display device that includes a plurality of gate drivers connected in series (col. 4, lines 23-37).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to include the teaching of Kubota having a plurality of gate drivers connected in series to be incorporated to Takahashi so as to increase the speed of the display.

Allowable Subject Matter

6. Claims 9-10 are allowed.

Response to Arguments

7. Applicant's arguments filed 9/15/2003 have been fully considered but they are not persuasive.

With respect to the rejection under USC 112, the amendment to the claims has overcome the rejection.

Applicant (middle of page 9) argued that in the present invention, the data signals are different in the two halves of each frame, while in Takahashi's reference, the applied signals are either at voltage level VH/2 or -VH/2, which has the same value. Examiner respectfully disagrees. Examiner submits that the claim is broad enough to read on the cited reference. The claim merely states applying a second signal different from said signal". This citation only indicates that the two signals are different. Having equal but different in polarity signals (VH/2 and -VH/2) is considered to be two different signals. Even if both signals in Takahashi's reference are the same (in value), they are different in the fact that both signals are separate and distinct from each other. Therefore, Examiner believes that the reference fairly reads on the claimed limitation, because there is no citation anywhere in the claim that specifically recites having the two signals with different voltage level.

Applicant (top of page 10) argued that Takahashi fails to teach or suggest applying a first voltage to charge pixels at the beginning of the frame and applying a second voltage to discharge pixels during the ending of the frame. Examiner respectfully disagrees, the rejection above clearly show the claimed limitations. The

gate pulses argued by the applicant are equivalent to the scanning pulses taught by Takahashi, which as clearly shown in figure 8B has two pulses.

As to Applicant's argument with respect to claim 5, the argument is substantially similar to the argument presented with respect to claim 1 and the response is substantially similar to the response presented above.

As to claim 11, the claim is broad enough to read on the cited reference. For example, the claim cites "completely discharging the cell beforehand of the frame". The term completely is broad enough that the mere fact of having Takashi teaching discharging the cell fairly reads on the cited limitations.

With respect to claim 18, Applicant argued that the output of the scanning line driver power selector 913 is supplied in parallel in Miwa's device. Examiner respectfully submits that the scanning lines (905) are connected to each other in series (col. 8, lines 47-50), which is what claimed in claim 18.

Conclusion

8. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Amr Awad whose telephone number is (703)308-8485. The examiner can normally be reached on Monday-Friday, between 9:00AM to 5:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Saras can be reached on (703)305-9720. The fax phone numbers for the organization where this application or proceeding is assigned are (703)872-9314 for regular communications and (703)872-9314 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)305-4750.

Amr Ahmed Awad

A.A
December 12, 2003